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JULY 1936 AUGUST

THE CIVILIAN CONSERVATION CORPS AND THE SOIL CONSERVATION SERVICE

For the past year in this state there have been nine Civilian Conservation Corps Camps operating under the supervision of the Soil Conservation Service. These nine Camp areas are well distributed in eastern Colorado in order that the control of wind and water erosion may be better demonstrated on land particularly affected. The location of these Camp areas is noteworthy. Six Camp areas are situated on important headwater drainages of the Arkansas River while the remaining three are located on tributaries in the Platte River catchment area. A total of six areas, three in the Arkansas and three on the Platte watersheds, lie within a thirty-two mile wide strip bordering the front range of the Rocky Mountains running northward from the New Mexico line to the Wyoming boundary.

The work of the nine Camps has been severely tested during their short existence. The enormous acreage covered with erosion control methods has withstood the test. The conservation of moisture and proper land use methods effected by the Camps have proved invaluable in correcting and preventing further erosion destruction to Colorado soils within these areas.

This issue of the "Colorado Conservancy" is largely composed of material collected from the nine SCS Civilian Conservation Corps Camps. The Soil Conservation Service in Colorado is justly proud of having as one of its component parts this splendid organization which has been built by cooperation and coordination of the U. S. Army, the ECW or Emergency Conservation Work Division, and the Soil Conservation Service.

To Camp Commanders, ECW Technicians, and the Enrollees of the Civilian Conservation Corps the Soil Conservation Service extends congratulations for a great undertaking perfectly functioning. The Editor.

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WHAT COOPERATORS IN A DROUTH COUNTY THINK ABOUT SOIL CONSERVATION

"This conservation work is the most worth while work in this country. Without it my stock wouldn't have a thing to eat. The grass is gradually reseeding on the contours, and you can see for yourself how much greener the grass is beside the ditch than it is away from it. I like it for the way it has saved my pasture from blowing as well as for the moisture it has conserved." L. A. Hickey, Cheyenne County.

"I think the contour furrows in the pasture and the contour listing are both all right. I have seen these furrows out here full of water after the rain, and I surely believe in it for this country. I also believe that running the chisel between the contours would be a good thing. It's too bad that we haven't had any more rain than we had this season to give this work a better trial. It hasn't had a fair chance as yet, but I can show you where I have some green grass along the contours that is going to seed, while you won't find any green growth away from the ditch. I can also see where this work has helped to hold my soil as well as the moisture that fell on it."

John Zebb, Cheyenne County.

"This dry weather has caused even my cows to go conservation-minded - they are following the contours now. I have seen my contours full of water only once, and, believe me, it surely did look fine. I can't say much as to the actual results except that I am glad my place is contoured and ready for rain whenever it does come." Jesse Stanley, Cheyenne Co.

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"There is moisture out here in my corn field that has been listed on the contour. It will make feed, I believe, and possibly some corn. I'm for it all right, and intend to do more of it another year. That field is the worst that I have, and that's the reason I contoured it. If it hadn't been for that hard rain and hail storm, it would have been in a lot better condition. As it is now, there's about two inches of the top soil that is hard on account of the beating it got during the storm. If we had only had another rain a couple of weeks ago, I'm satisfied that I'd have raised more corn on that field than I ever did before, but the way it's been this year hasn't given this contour work a fair chance." Fred Smith
Cheyenne Co.

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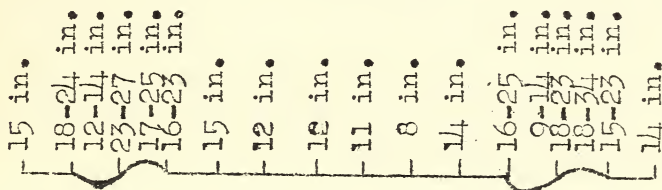
"We are sold one hundred percent on the work the Soil Conservation Service has done on our ranch. We have been so short on moisture (only having received one rain since the work was done) that the results can only be guessed at, had it had a chance.

"Both wind and water erosion can positively be controlled if the set up is carried out. More vegetation is now growing where the Killofer-Chisol was used on the pasture than we have ever seen on the same number of acres. In our opinion, the Soil Conservation Service is doing the greatest work ever done in our county." Hammond Brothers, Cheyenne County.

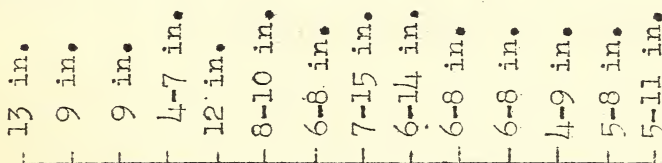
CONTOURED AREA GROWS MORE GRASS

3

Bluestem grass growth on contoured area of Seidensticker farm, Castle Rock, Colorado: (These contours were constructed in August, 1935 on a two-foot vertical interval and no seeding has been done.)



Blue stem growth on adjacent uncontroled areas:



Scale $\frac{1}{4}$ inch = 3 feet.

DOUGLAS COUNTY COOPERATOR COMMENTS ON WORK

"I wish to express my satisfaction with your work and the results it showed under storm conditions. The contours were very satisfactory and the water they held on the hillside and allowed to penetrate into the ground will improve my pasture twenty to thirty percent. The terraces held water and prevented any erosive action on the cultivated ground. The dams will and have held back water and will make good stock water ponds.

"This summer is the first time I ever held my share of the water that fell on my place. Before, it has always run off and on downstream, sometimes gully-ing and doing a minimum of good." S.H. Stream, Douglas Co.

CONTRIBUTIONS OF THE CIVILIAN CONSERVATION CORPS

The C. C. C. enrollees, the Army and the SCS-ECW personnel are fused as one unit to build a better Colorado; to make contributions to the nation's welfare by preserving what native sod is left; and to restore as nearly as possible original conditions and value in those areas which have been unthoughtfully rendered valueless through improper use.

It is an honor and a tribute to each individual connected with the Service to be among those who have been delegated to this task.

The Army and Technical Service have jointly accepted the responsibility of preparing the enrollee to go into civil life better prepared to make a good living, hold better jobs and be a credit to the community in which he later establishes himself.

The results already obtained along this line stand as an achievement and can be taken as a model for the future, and continued efforts will bring about attainment of that objective.

Enrollees, we are sure, will take advantage of every opportunity to utilize their spare time to prepare themselves to meet better the problems of life and to deserve the respect and admiration of those whom they contact in their daily walk of life.

ECW through the C. C. C. Camps is conserving young America, as well as the land, and it behooves each one of us to make as large a contribution as possible.

W. E. Doner
State Administrator, ECW
Soil Conservation Service

Camp SCS-1, Trinidad, Colorado

Superintendent J. H. Kene reports: "A few days ago one of the highway supervisors informed me that in the areas below where we have completed our work, the recent heavy storms did not destroy the shoulders adjacent to the culvert wings along the highway as previously experienced.

"On a certain piece of land below the Cortese ranch on Frisco Creek, there formerly existed a small wet weather spring. Two or three years after the Cortese Bros. started their soil conservation, this spring increased in volume and duration to such an extent that they now irrigate seven acres of crop land with it."

Camp SCS-8, Wellington, Colorado

Superintendent George L. Mauk reports: "Summer showers continued to fall in the Wellington area over the weekend. The quantities of precipitation were not large and, in general, the intensities were low.

"Saturday, July 11, the camp received .59 inches of rainfall in two hours and forty-five minutes, and during the night .21 inches fell in scattered showers. At the Swanson ranch, where one of our rain gauges is located, a little over 1 inch fell Saturday, and nearly another inch on Sunday.

"We have considerable acreage of contour furrows near Swansons, but they showed evidence of only about 3 inch collection. The dams collected small quantities of water in the borrow pits. Diversion ditches above contours carried small quantities of water, and the wire spreader outlets appeared to serve their purpose well.

"The most noticeable effect of the showers was the impetus they gave to the ground moss which covers that area. Our contour ridges showed some growth of moss. If that growth continues, the permanence of the ridge will be assured.

"Penetration tests were impossible in that area because the soil is so shallow that the moisture reached bedrock in all locations. The soil is only 6 to 7 inches in depth.

"Both the Boxelder and Rawhide carried minor floods. At the Monroe ranch, where the camp constructed a channel change, there was a flow calculated to be 563 second feet. The structure operated perfectly.

"Four samples were taken to determine the amount of silt carried by the streams. The following figures were computed without the aid of special equipment and the samples were sent in to the Colloge for accurate tests. Results of these tests will be sent in as soon as possible. The following percentages are by volume:

| | |
|--|--------|
| Boxelder at Monroe Ranch | 5.9% |
| Boxelder below channel change | 6.8% |
| Boxelder at North Colloge Road | 16.0% |
| Boxelder and Rawhide at North Poudre Weir | 15.0%" |

Camp SCS-5, Springfield, Colorado

Superintendent W. S. Caton reports that after a 2.5 inch rain at Springfield last May, the following results were noted: "In terraced fields, 6 feet below the base of the terrace, moisture had penetrated 22 inches. Halfway between the terraces, moisture had penetrated 31 inches, while 8 feet above the terraces, moisture penetration was shown to have gone 72 inches and farther. Comparing this with an old cultivated field which had been abandoned, the moisture tests made showed only 11 inches of penetration.

"Over the past 11 months period a vegetative increase of 57 percent has been noted on the contour furrowed areas near Springfield."

Superintendent H. G. Beehler reports: "On the Ott place two miles east of the Templeton Gap Camp a rain of one and one-half inches fell in one hour's time. A part of his field was contour-listed and a part was not. On the contour-listed area the water was all held with no run-off, while on the non-contour-listed area the run-off was very heavy. There is a distinct difference in moisture and vegetative growth over these areas. The corn on the contour-cultivated area is still growing and to date is showing no effect of the drought, while on the area that was not contour-listed, the corn is curling in the mornings and showing great need of moisture. On the Rosenberg place just north of Colorado Springs, on the Templeton Gap road, contour listing was done early this spring. There were several rains that put water in these furrows. The corn over this field shows an even growth and is showing no signs of suffering from the drought. Just across the road from this field is a field of corn that was planted up and down the slope. As a result, the water ran to the lower side making a good growth, while the corn on the upper side is noticeably smaller and suffering from drought. These are two noticeable comparisons of contour cultivation and non-contour cultivation. Up to date, I believe the contour-listed fields are standing the drought in good shape."

Camp SCS-9, Elbert, Colorado

Superintendent Ralph V. Prink reports: "On a contour-listed field .5 inch of rain fell between three and four P. M., June 7, 1936. A penetration test taken at 9:30 A. M., June 9, 1936, showed a moisture penetration of 50 inches. On an adjacent untreated area penetration was only 3 inches.

"An interesting happening occurred during our last heavy rain. Some local people observed water running down a gulch opposite some controlled land

8 and remarked that the only water going down the gully was from the land that was uncontrolled. The people of this and neighboring communities are greatly concerned with the work being done by the Soil Conservation Service as a means to control floods.

"We have a very good showing of grass on furrows that were constructed early in the year."

Camp SCS-2, Pueblo, Colorado

A successful water-spreading system has been devised by the technical staff of this camp. Superintendent H. J. Decker gives the following observations regarding this system:

1. The size of diversion ditches is according to the amount of water that we want them to carry.
2. Diversion ditches are either .2 or .4 of one percent grade to the point of the first spreader opening.
3. Diversion ditches and spreader ditches are on a zero grade past a series of spreader openings to permit water to flow out all openings at the same time.
4. There is a berm of about ten inches to a foot below the dykes that are on the upper side of the ditch above the openings so that this dyke cannot sluff into the ditch and clog the opening.
5. The dirt that comes out of the opening is used to construct a dyke on the upper side of the ditch opposite the opening so that there will be no direct flow of water through the opening from above, thus checking the velocity and cutting action of the water.
6. The ends of all large dykes on diversion ditches at the openings should be riprapped to prevent cattle tearing them down by rubbing their heads on them. We have not experienced this trouble on the smaller dykes.
7. All openings should be level from end to end to permit the water to flow out in a sheet.
8. The distance between spreader ditches will depend upon the contour and slope of the land, but to ob-

tain the best distribution of water should not be over 200 feet apart on any land.

9. The smaller spreader ditches below the diversion ditches do not need the capacity of the diversion ditches because the water is flowing into them in more or less of a sheet and is being discharged almost immediately. We are building these ditches 20 inches wide, from six to eight inches deep, with a dyke at least a foot high.
10. All openings in both diversion and spreader ditches should be at least 20 feet long or longer, depending upon the contour of the land below.
11. There should be as many openings as necessary and located at the most advantageous points to get the best spread, especially high points. Never place an opening in the center of a low place. The low places will take care of themselves.
12. Where any ditch crosses a low place, the dyke should be built 8 to 12 inches higher and in many cases riprapped.
13. Where spreader ditches cross a low place, they are raised and run on a grade of .6 percent down to the first opening and then on a zero grade past the openings. This is so they will carry the water out of the low places to the openings and also allows for the silting of the ditch that is on zero grade. A ditch that is dead ended is run on the same grade if it is to carry water any distance to openings.
14. The whole idea is to get the water out of the low places on to the high places and there spread it out in a sheet. We are utilizing what would otherwise be waste water and by so doing are establishing a much denser vegetative cover.

Estimates indicate that 1 inch of additional sub-soil moisture was retained as a result of the emergency contour listing of 2,000,000 acres in the five state emergency area. According to determined water usage this additional moisture is capable of adding 3,600,000 bushels of grain to the normal production.

Secretary of Agriculture Henry A. Wallace was an interested visitor to the Soil Conservation Service demonstrational areas on July 13th. Secretary Wallace expressed a keen interest in the erosion control work of the Black Squirrel Creek, Kiowa Creek, and Cherry Creek demonstrational areas. He stated that he had visited other demonstrational areas throughout the nation but had never in one afternoon seen so much work to prevent water loss.

The Secretary displayed an adequate knowledge of the drouth conditions throughout eastern Colorado, especially in the southea stern Colorado dust areas. He pointed out that in these wind erosion areas moisture conservation was paramount. "Only by revegetation which results from conservation of all elemental water will the severe dust storms be averted," he said.

Mr. Wallace was greatly impressed with the contour pasture terraces and furrows as soil and water conservation measures. "These field experiments," he said, "as indicated by the use of pasture terraces and contour furrows, should, when revegetated, increase range carrying capacities 25 to 50 percent above present capacities."

Secretary Wallace stated that at times he was very much concerned about the appropriation needed by the Soil Conservation Service. After viewing the erosion control demonstrational work on the Black Squirrel, Cherry, and Kiowa Creeks, the Secretary stated, "I am fully aware that in these areas the run-off from a single rain may cause loss of lives; hundreds of thousands of dollars property damage, and irreparable soil losses. There are many similar cases throughout the nation. Thus, I believe each dollar invested in the Soil Conservation Service will probably result in the immediate return of from two to three dollars and the return in the distant future of from ten to fifteen dollars."

Greasewood, or "chico" as it is locally known, is an alkali-enduring shrub of wide and abundant distribution in the range states. The fleshy succulent leaves of this plant are a valuable source of feed to many cattle and sheep of the western ranges. There are numerous range lambing areas where the leaves from this plant make up a large part of the ration enjoyed by lambing ewes.

Sheepmen, who seasonally traverse permanent sheep trails with their flocks, have assigned numerous death losses to this plant. Losses from flocks pushed hungrily over a long trail were known to occur when the sheep were allowed to feed on the tender sprigs of greasewood en route. Acute symptoms were prevalent in a few hours and many sheep died. This became a monotonous and costly occurrence; so investigators were brought in. Experimental evidence confirmed the belief of stockmen when sheep given large dosages of green greasewood were poisoned.

Experimental evidence indicates that about 5 percent of the sheep's weight must be eaten before greasewood is poisonous. Sheep accustomed to it die infrequently, and when eaten in conjunction with other feeds no death losses were noted. The leaves are more poisonous late in the season than early, but death losses are rare in the fall because the leaves become woody and unpalatable. The writer saw 150 sheep die from greasewood poisoning in September in eastern Utah one fall. These ewes were being trailed along a barren trail and when allowed to fill up on greasewood these losses occurred. The following explanation makes clear the reason sheep losses may be expected as a result of browsing upon greasewood.

This shrub, during the winter months, is leafless and spiny. In the early spring it produces young tender leaves and stems. This juicy new growth is

12 easily browsed by sheep. Later during the summer and fall the new spring growth becomes somewhat dry, spiny and unpalatable. Therefore, most of the browsing on the greasewood by sheep occurs when its leaves and stems are tender and palatable.

During the period when the early spring growth is most appetizing and easily browsed, losses may be expected; but only when hungry sheep, especially those that are salt hungry, are permitted to fill up quickly and almost exclusively on greasewood are the losses the greatest.

The greasewood has a somewhat salty taste, which makes it particularly relished by salt hungry sheep. It has been reported by some sheepmen that salting the sheep is a valuable precautionary measure when changing the flock from a range free from greasewood to one where it is growing abundantly.

Trailing sheep from one feeding ground to another often requires going over grazing ranges on which there is little or no food, and frequently salting is delayed until new feeding grounds are reached. A trailing flock of forage-hungry, salt-hungry sheep coming upon a greasewood area are in great danger. The same may be said of sheep held in shearing corrals and penned for varying periods of time and then allowed to graze in an extremely hungry condition upon areas supporting greasewood.

Under normal range and feeding conditions the greasewood is a safe plant for sheep to browse, but if hungry sheep are permitted to satisfy their hunger quickly and completely on it, poisoning and death may be expected.

B. W. Allred
Ass't Range Examiner

GRASS

Next to importance in the divine profusion of water, light and air--those three physical facts which render existence possible--may be reckoned the universal beneficence of grass. Lying in the sunshine among the buttercups and dandelions of May, scarcely higher in intelligence than those minute tenants of that mimic wilderness, our earliest recollections are of grass. And when the fitful fever is ended, and the foolish wrangle of the market and the forum is closed, grass heals over the scar which our descent into the bosom of the earth has made, and the carpet of the infant becomes the blanket of the dead.

Grass is the forgiveness of Nature--her constant benediction. Fields trampled with battle, saturated with blood, torn with the ruts of cannon, grow green again with grass, and carnage is forgotten. Streets abandoned by traffic become grass-grown, like rural lanes, and are obliterated. Forests decay, harvests perish, flowers vanish, but grass is immortal. Belonged by the sullen hosts of winter, it withdraws into the impregnable fortress of its subterranean vitality and emerges upon the solicitation of spring. Sown by the winds, by wandering birds, propagated by the subtle horticulture of the elements, which are its ministers and servants, it softens the rude outlines of the world. It evades the solitude of deserts, climbs the inaccessible slopes and pinnacles of mountains, and modifies the history, character and destiny of nations. Unobtrusive and patient, it has immortal vigor and aggression. Banished from the thoroughfare and fields, it bides its time to return, and when vigilance is relaxed or the dynasty has perished, it silently resumes the throne from which it has been expelled but which it never abdicates. It bears no blazonry of bloom to charm the senses with fragrance or splendor, but its homely hue is more enchanting than the lily or the rose. It yields no fruit in earth or air, yet should its harvest fail for a single year famine would depopulate the world. By the late Senator John J. Ingalls.

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